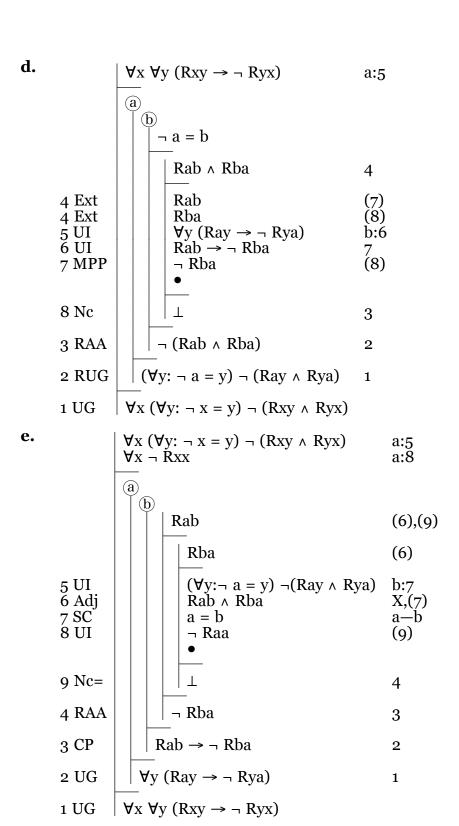
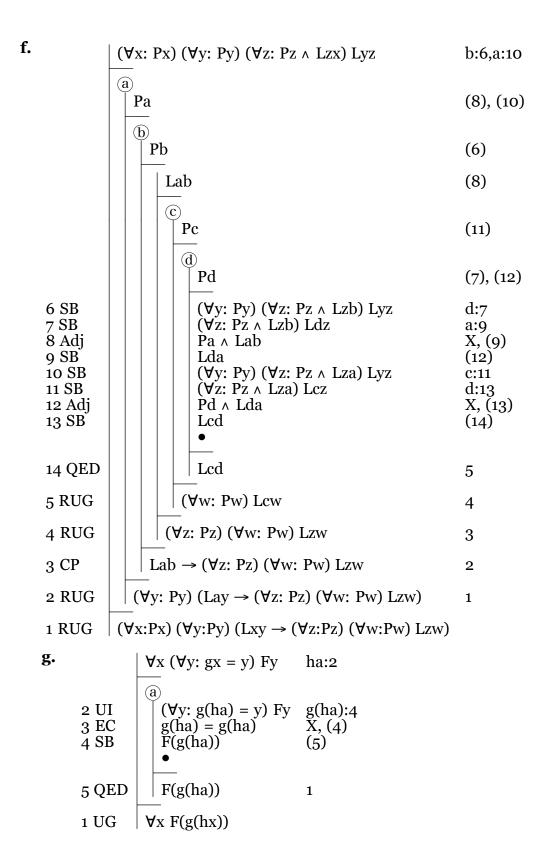
7.6.xa. Exercise answers

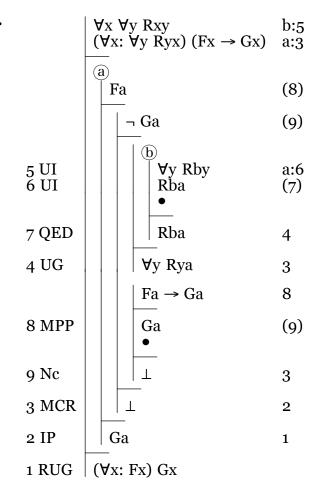
These answers use the rules RUG, SB, SC, and MCR rather than RUP and RUC. Derivations using the latter rules can be constructed from them by replacing each use of one of the first four rules by a series of three steps as shown in the following table:

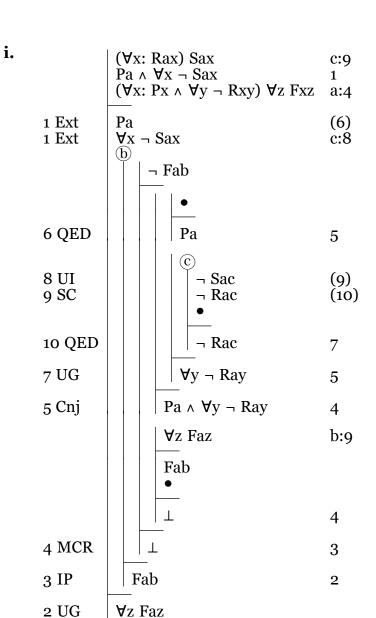
			nagarani	alternativusing RU			
			RUG	RUC, UC	G, CP		
			SB	RUP, UI	, MPP		
			SC	RUP, UI	, MTT		
			MCR	RUP, UI	, RC		
1.	a.		∀x ∀y Rxy (∀x: Rxx) Gx	a:1 a:3			
		1 UI 2 UI 3 SB	∀y Ray Raa Ga •	a:2 (3) (4)			
		4 QED	Ga				
	b.		(∀x: Fx) Gx	a:3		$\forall x (Fx \rightarrow Gx)$	a:2
			(a) Fa	(3)		Fa	(3)
		3 SB	Ga •	(4)	2 UI 3 MPP	Fa → Ga Ga	3 (4)
		4 QED	Ga	2	4 OED		_
		2 CP	Fa → Ga	1	4 QED	Ga	1
		1 UG	$\forall x (Fx \rightarrow Gx)$		1 RUG	(∀x: Fx) Gx	
	c.		Fa	(2)		$(\forall x: x = a) Fx$	a:2
			b b = a	a—b		☐ Fa	(2)
			b - a	a—b	2 SC	¬ a = a •	(3)
		2 QED=	Fb	1	3 DC		1
		1 RUG	$\forall x: x = a$	ζ	1 IP	Fa	





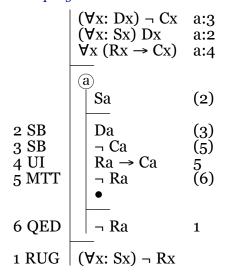
h.



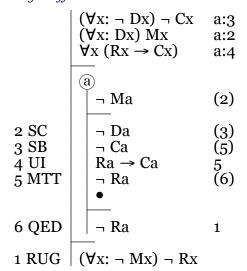


2. a. Every road sign was colored
Every stop sign was a road sign
If anything was colored, it was painted
Every stop sign was painted

b. No road sign was colored Every stop sign was a road sign If anything was red, it was colored No stop sign was red



C. Only road signs were colored
Every road sign was a traffic marker
If anything was red, it was colored
Only traffic markers were red

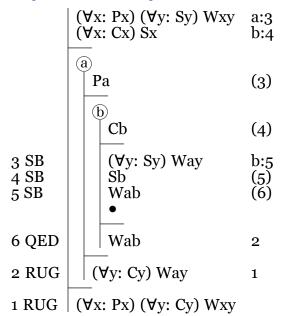


Among road signs, all except colored ones were replaced Every stop sign was a road sign If anything was colored, it was painted Among stop signs, all except painted ones were replaced

		a:7 a:3 a:4			
	a Sa ∧ ¬ Pa	2			
2 Ext 2 Ext 3 SB 4 UI 5 MTT 6 Adj 7 SB	Sa ¬ Pa Da Ca → Pa ¬ Ca Da ∧ ¬ Ca La •	(3) (5) (6) 5 (6) X, (7) (8)			
8 QED	La	1			
1 RUG	$(\forall x: Sx \land \neg Px) Lx$				

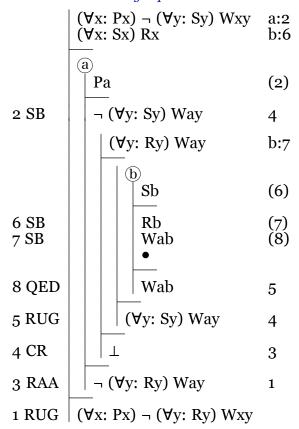
Everyone watched every snake Every cobra is a snake

Everyone watched every cobra



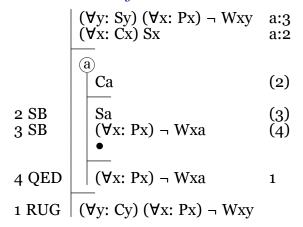
f. No one watched every snake Every snake is a reptile

No one watched every reptile



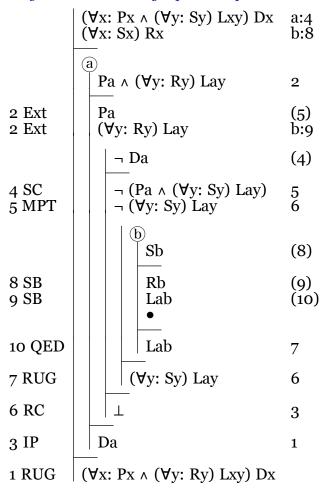
g. No one watched any snake Every cobra is a snake

No one watched any cobra



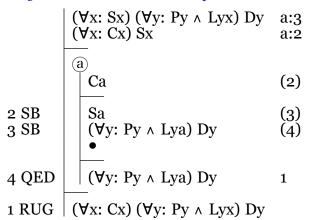
h. Everyone who likes every snake was pleased Every snake is a reptile

Everyone who likes every reptile was pleased



i. Everyone who likes a snake was pleased Every cobra is a snake

Everyone who likes a cobra was pleased



Glen Helman 01 Aug 2004